MOTHER-CHILD CONVERSATION ABOUT PAST AND FUTURE EVENTS

by

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ABSTRACT

The development of remembering the past and imagining the future occurs through conversations about past events and future events with adult partners. In accordance with memory socialization, future talk also provides the social and natural context for children to understand the temporal concept and plan for the future. In the present study, we recruited 54 Caucasian mother-child dyads and 49 Chinese mother-child dyads. They were interviewed in pairs to jointly talk about specific past and future events taking place in two temporal distances from the present, namely, in the near and distant. Analysis focused on (a) cultural differences in mother's past and future talk (b) cultural differences in children's past and future talk (c) variation of mother-child conversation based on effects of culture, gender temporal direction and temporal distance and (d) relationship between mother's conversation style and children's response specificity. Results showed that regardless of culture and gender, mother's use of elaboration and evaluation showed the consistency between past and future talk, and positively correlated with children's specificity of responses. References to general knowledge were found to have facilitation effect only in future talk. Considering the cultural differences, Caucasian mother-child dyads produced more specific details in both past talk and future talk, but the difference is stronger in future talk. The pattern moved towards the opposite direction with respect to general detail. This finding also sheds light on the cultural differences in autobiographical memory and episodic future thinking during middle childhood and adulthood.

BIOGRAPHICAL SKETCH

Mengru Liu earned her Bachelor of Science degree in Applied Psychology from Hunan Normal University in 2012. In August 2012 she joined the master program in Human Development Department, Cornell University.

Mengru Liu's dissertation entitled, "Mother-child conversation about past and future events" was supervised by Dr. Qi Wang and Dr. Babara Koslowski.

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TABLE OF CONTENT

LIST OF TABLES

Introduction

E. Tulving claimed that episodic memory, which has traditionally been defined as a memory system that supports remembering personal experiences, allows individuals to engage in "mental time travel" into both the past and the future (Tulving, 1985). The parallel relationship between remembering the past and imaging the future was established through several previous studies. For example, amnesic patients with memory deficits were reported to also have difficulty imagining future events. (Tulving, 1985) Also, William et al. (1996) studied suicidal and non-depressed subjects, and found that the specificity of a retrieved past episode predicts the specificity of future responses. Developmental research showed that regardless of age, people who recall memories with more specific details will also be more specific in future thinking (Wang et al. 2011, Wang et al. 2013). Neuroscience research further supports a common brain network that underlines both episodic memory and future thinking. The left hippocampus and posterior visual spatial regions were reported to be engaged in both past and future event construction (Addis, 2007).

Social learning could affect, and in some way improve memory functions, skills, strategies and practices (Nelson&Fivush, 1993) In particular, the autobiographical memory should be regarded as a social construction, which is generated from past experiences, but is elaborated, contested, negotiated and maintained through social interaction. Nelson also suggested that this kind of social construction in childhood always happen in the context of parent-child conversations

about the past (Fivush, 1995). Mostly children learn the content and organization of autobiographical memory through parental narratives. Parents who use an elaborative style always provide more information with cues, and pose many questions to encourage children to engage in the conversation（JA Hudson, 2006）. For instance, classic work on parent-child conversation indicates that mothers who are more elaborative in recalling the past have children who remember more in later memory responding (Fivush, 1995). And this kind of influence is long-standing and bidirectional as children grow older (Elaine Reese, 1993). Also, parental greater use of more casual and temporal language predict their children's use of temporal and casual language when retelling the story to strangers（ (Berntsen&Rubin, 2012)）.

Unlike past talk, there has been little investigation of how parents talk with children about future events. Similarly, future talk provides the social and natural context for children to understand the temporal concept and plan for the future. As found in conversations about the past, parents' use of a more elaborative questioning style is positively correlated with children's contribution to the future talk (JA Hudson, 2006). However, as was observed in neural differentiation research, future events further recruited regions such as the right frontpolar cortex, left ventrolateral prefrontal cortex and right hippocampus (Addis, 2007). Future thinking requires additional cognitive efforts. Rather than simply retrieving what has happened, future thinking requires construction based on what had happened, interferences about what might happen or elicitation of hypothetical statements (Elaine Reese, 1993). Therefore, in addition to maternal elaboration, reference to general knowledge and

past episodes is an effective elicitation style for engaging children in planning for the future. Surprisingly, Judison also found that repetitive style, which is useless in assisting children's autobiographical memory recollection, facilitates 4-year-old children to respond with more specific information about the future (JA Hudson, 2006). Past and future conversations also vary with respect to how events are situated in time. Mothers use more temporal sequence reference (e.g. before or after) in past talk versus more conventional references (e.g. two days later or three weeks later) and more hypothetical references in future talk.

However, extant developmental research on how mother talks with their child about future events mainly focused on preschool year children, and little is known about mother-child conversation during middle childhood. The ability to re-experience the past and pre-experience the future develops with age. It is widely accepted that autobiographical memory develops after age 2, because children at age 2 begin to understand the concept of self (Berntsen&Rubin, 2012). Research verified that children as young as 2.5 years could remember both generic routine information and episodic events with details. However, children cannot differentiate the distinction between past and future until the age of 4, and the ability to mental time travel also emerges at the same age (JA Hudson, 2004, Moore&Lemmon, 2001). Although preschoolers acquire understanding of the temporal sequence order, they always misuse conventional time to mean any time in the past or the future (Harner, 1982). By the end of preschool years, a relatively organized temporal framework forms, which allows children to judge which event is more recent or distant and to

situate events in temporal order within a few months (Berntsen&Rubin, 2012). This ability continues to develop in later years. By 7 to 8 years of age children can accurately predict future time events in terms of the days of the week, and by 10 years of age their estimations of future time distances are equivalent to adult performance (Prabharkar, 2012).

Intriguingly, the style with parents and children co-construct past episodes and future plans may differ between cultures. Previous studies showed that among high-elaborative mothers, the purpose of mother-child conversation is to improve parent-child relationship and collaboratively recreate stories about shared experiences, whereas low-elaborative mothers view the conversations as a forum for their children's memory performance (Reese, 1993). For that matter, conversations between American mother–child dyads were co-operative partnerships, whereas conversations between Chinese mother–child dyads tended to be hierarchical and didactic. Thus, American mother-child dyads tend to take a high-elaborative approach, while Chinese mother-child dyads are more likely to be low-elaborative (Wang 2001, Wang 2000). Cultural differences of maternal elaboration and content have been identified in memory sharing and storytelling (Wang et al., 2000). Wang et al. study indicated that relative to Chinese mothers, Caucasian mothers usually take an elaborative approach to elicit their children's autobiographical memory. In this approach, they repeatedly ask open-ended questions when the child has no information to share. In contrast, repetitive style is more prevalent among Chinese mothers, who are prone to repeat the child's utterance without providing new

information. However, cultural effects on future talks of mother-child dyads have not been examined yet. Wang et al.'s another recent study suggested that compared with Chinese immigrant children, Caucasian children generated more specific details for both past and future events (Wang et al., 2013). Thus, the question of whether and how socialization results in this cultural differences remains an important theoretical.

The present study

On the basis of previous theories, we questioned that (a)whether the way mothers structure past event conversations is consistent with the way they structure future event conversations and (b) whether styles of past talk and future talk vary across dyads(ie: elaboration and repetition) in ways that may affect children's subsequent autobiographical memory and future thinking. To investigate these hypotheses, we examined past and future episodic thinking in Chinese and Caucasian mother-child dyads. We interviewed mother and children in pairs to jointly talk about specific past and future events taking place in two temporal distances from the present, namely, in the near and distant. We examined episodic specificity in children's responses using a standardized scoring procedure that distinguishes episodic information from non-episodic or general information in an event (Addis et al., 2008; Levine et al., 2002; Wang et al., 2011). We segmented each generated event into distinct details, and then classified the details as either specific if they concerned episodic information pertaining to the event (e.g., what, where, when), or general if they only concerned semantic facts or other information unspecific or "external" to the event.

In congruence with Wang et al.'s adult findings and middle childhood study,

we expected that regardless of temporal distance, Caucasian mother-child dyads would produce more specific details than Chinese mother-child dyads for both past and future events. Also, we expected the cultural differences in maternal narrative style established in past talk to exist in future talk. Though repetition was proved to be an effective narrative style to elaborate 4-year-old children's future thinking, we made no a priori predictions considering the lack of data about middle childhood across culture contexts. The parallel between past and future event construction would also be evident at the individual level, such that independent of culture, mother and children who recalled past events with greater episodic specificity would also construct future events with greater episodic specificity. Meanwhile, a mother who was highly elaborative rather than repetitive in past talk would also be more elaborative in future talk. In addition, in line with previous findings, we speculated that mother and children would represent past events in greater specific detail than future events, and to represent near events in greater specificity than distant events. We further examined the effects of temporal distance on event construction and expected children to represent temporally close events in greater specific detail than distant events, in line with adult data (Addis et al., 2008; Arnold et al., 2011; D'Argembeau & Van der Linden, 2004; Gamboz et al., 2010).

We also examined gender differences in the episodic specificity of both past and future events. Past research has documented that females, both children and adults, produced lengthier responses and a greater number of specific details than male when remembering the past and imaging the future (Nelson & Fivush, 2004;

Pillemer, Wink, DiDonato, & Sanborn, 2003). In view of mothers' styles of conversing with their sons and daughters, although mother-son dyads take more conversation turns, mothers tend to talk more in each conversation turn, elaborate more and use more emotion words with their daughters rather than sons in both cultural contexts (Wang&Leitchman, 2000). Based on the literature, we expected mothers from both cultures would have higher frequency of elaboration in past talk as well as future talk, and mother-daughter dyads would produce more specific details than mother-son dyads in both past and future event construction.

Method

Participants

The participants were 49 Chinese immigrant (26 boys) and 55 Caucasian American (19 boys) children and their mothers from Ithaca, New York. The mean age was 8.5 years-old, which did not significantly different across the two cultures. Children were recruited through local schools and by word of mouth, and were taking part in a larger longitudinal study of socio-cognitive development. All children came from middle-class backgrounds, with the majority of the mothers having obtained a college degree or beyond. Chinese immigrant families were originally from mainland China, Hong Kong, and Taiwan. Most of the children were born in the United States.

Procedure

Two female researchers visited each participating family at home. The two researchers were English-Chinese bilingual speakers, who were proficient in the native spoken language of the family. One major researcher was responsible for conducting the entire research project, while the other assistant research mainly in charge of controlling videotape-recording. The interview was conducted in the language of the children's choice. All materials were written in both English and Chinese and translation and back-translation procedure was carried out to ensure their equivalence in both literal and sense meaning. On average, the entire home visit took approximately 30 to 40 minutes and was video tape-recorded.

At the beginning, research assistants told mothers that they were interested in studying what children remember about past experiences and what they plan for the

future. They explained that in order to make children feel comfortable, mothers would also be asked to participate in the conversation. Each mother would talk with her child about four events they had both participated in. They were expected to recall two specific past events, one that had happened to them recently and one when the child was very young, and to imagine two specific future events, one that could happen to them soon and one when the child was a grown-up. To reduce cognitive load, the two temporal distances (near and distant) were blocked within each temporal direction (past, future) and their order of presentation was counterbalanced. The order of the past and future sections was further counterbalanced.

After this preparation, mother and child sat comfortably in a quiet place in the home with a tape recorder recording their conversation. No time restrictions were placed on the length of conversation. The mother informed the research assistant when the interview was completed.

Coding

One trained bilingual Chinese-English research assistant coded the data. A second assistant independently coded 20% of the data for reliability check. Both coders were unaware of the study hypotheses. The average intercoder reliability r (Rosenthal & Rosnow, 1991) across the four events was .87 for both Chinese and Caucasian samples. Disagreements were resolved by discussion among the coders.

Following the method from previous studies, we coded the data following the standardized scoring procedure (Reese&Fivush, 1993, Addis et al., 2008; Levine et al., 2002; Wang et al., 2011). For each event description, we first identified the central

event. If mother and children mentioned more than one event, the one that garnered the most details and occurred within a relatively brief time frame was selected as the central event. We then segmented each event description into details codes, content codes and conversation codes, which was adapted from previous studies (Reese&Fivush, 1993, Wang et al. 2000, 2011&2013).

Detail codes

Specific Details

Episodic information directly relevant to the central event, which are specific to time and place, are of limited duration (i.e., a few hours), and reflect a sense of episodic re-experiencing (i.e., reliving the event). Specific details are coded into five mutually exclusive categories: event (i.e., happenings or the unfolding of the story), place, time, perceptual, and emotion/thought.

General Details

Non-episodic information, including semantic details, metacognitive statements, information pertaining to other non-central events or extended events that were not specific in time and place, and repetitions.

Content Codes

The details are further coded as child if they concern only the child (e.g., Child: “I went swimming” Mother: “You were sad”), other if they concern other people (e.g., Child: “she was late”), or self-other if they concern the child and others (e.g., “We had a fight” and “I talked to him on the phone”).

Conversation codes

Mother codes

Open-ended questions: Mothers' questions that asked the child to provide information about the event under discussion, including all wh- questions (e.g., What did we do after you got a shot?) and "Do you remember X?" questions (e.g., Do you remember going to Myer's Park?).

Yes-No questions: Mothers' questions that only required the child to confirm or deny the information provided by the mother (e.g., Did you swim in the lake?).

Contextual statements: Mothers' utterances that provided new information about the memory event without calling for a response (e.g., Uncle Tang brought you a nice present.).

Repetitions: Mothers' comments that either repeated the exact content or the gist of their own previous utterance or tried to elicit memory information from children but provided no new information (e.g., "What else happened? What else?")

Evaluations: Mothers' utterances that confirmed, negated, questioned, or repeated children's previous statement.

Child codes:

Memory responses: This includes the child's responds to both memory questions and yes-no questions, which should be coded as either specific or general. (e.g., specific detail, M: What did you see at the zoo? C: Monkeys.). Child's "yes" responses to memory questions (e.g., Mother: "do you remember we stayed and we played with

Brae?", Child: "Yes") should be coded as specific. Child's responses to yes-no questions are coded depending on the nature of the question. If the mother asked about a specific detail (e.g., Mother: "Did it get darker?"), then the child's "yes" or "no" response is coded as specific. If the mother asked about a general detail, then the child's response is coded as general.

Placeholder: When the child repeated his or her own or the mother' previous utterance or took a legitimate turn without providing any information (e.g., M: Do you remember anything about going horseback riding? C: I don't know.).

Evaluations: Children's utterances that confirmed, negated, or questioned mothers' previous statement. Head nods or shakes that could be inferred from mothers' subsequent comment are also coded (e.g., Mother: "Yes, you're right. The dumpster is green"; Child: "Um-hum.").

Past/Future references: Frequency of propositions about past references in the future, and future references in the past talk.

Results

A 2 (culture) x 2 (gender) ANOVA indicated no significant culture effect on the average number of words per event in past talk (per past event, US: M=280; China: M=260), identified by a culture main effect for future talk (US: M= 185; China: M=135, p=0.001), indicating that Caucasian mother-child dyads provided significantly lengthier conversation for future talk. No gender differences and culture´ gender interaction was evident for this variable.

Mother's talk

Table 1 showed the mean frequencies and standard deviations of mothers' specific codes, general codes, content codes and conversation codes for past talk and future talk by cultural group, as well as the t and p values from a two-tailed independent t test.

Consistent with predictions, Caucasian mothers produced more specific details and more meta-cognitive statements than Chinese mothers, who produced more general details in both past and future talk. However, the cultural differences in number of general details in past talk did not appear in conversations about future events, suggesting that Caucasian mothers used more general references in future talk. Furthermore, in both past talk and future talk, Caucasian mothers were more child-centered and referred to the child much more often than Chinese mothers, who prone to have higher frequency of other-references.

The results also demonstrated that Caucasian and Chinese mothers did not differ significantly in their use of elaborations in past talk. To be more specific, Caucasian mothers significantly provided more statements with new information than Chinese mothers; however, the two cultural groups did not differ in terms of open-ended question and yes-or-no question. By contrast, in future talk, Caucasian mothers were significantly more elaborative than Chinese mothers by eliciting more contextual statements. Meanwhile, Caucasian mothers used fewer repetitions and provided more evaluations when talking with their children about past and future events relative to Chinese mothers.

Child's Talk

Table 2 showed the mean frequencies and standard deviations of children's specific codes, general codes, content codes and conversation codes for past talk and future talk by cultural group, as well as the t and p values from a two-tailed independent t test.

Results implied a high consistency between mother variables and child variables. In the same way, Caucasian children produced more specific details than Chinese immigrant children, and that difference became larger in future talk than past talk. Also, the number of general details, which differed significantly between cultural groups in memory recollection, was absent in future thinking. Furthermore, compared with Chinese children, Caucasian children produced significantly more memory responses and evaluations for conversations about both past events and future events.

Surprisingly, the expected cultural differences between self-references and other-references was significant only for the past talk.

Variance analysis of mother-child conversation

In order to examine mother-child conversation across temporal directions and temporal distances in more detail, we summed up each variable into specific detail and general detail at each time point. We conducted two 2 (culture: EA vs. CI) x 2 (gender: girls vs. boys) x 2 (direction: past vs. future) x 2 (distance: near vs. distant) mixed model analysis using SPSS ANOVA MIXED program separately for specific details and general details, with culture and gender being between-subject factors, direction, distance being within-subject factors, and family being a random factor. The model included all main effects and up to 3-way interactions.

A main effect of culture emerged only for specific details, $F(1, 202) = 13.356$, $p = .000$, qualified by a Culture x Direction interaction for both specific and general details, $F(1, 202) = 17.974$, $p = .000$. Follow-up Tukey HSD tests ($p<.05$) showed that Caucasian mother-child dyads produced more specific details than Chinese mother-child-dyads did, and the differences was larger in conversations about future events. The pattern was reversed for general details. For that matter, Chinese mother-child dyads produced significantly more general details than Caucasian mother-child-dyads in past talk; whereas the two groups produced similar numbers of general details in future talk.

In view of specific details, a main effect of gender emerged, $F(1, 202) = 10.382$, $p = .002$. Follow-up Tukey HSD tests ($p<.05$) confirmed that mothers produced more specific details when conversing with their daughters rather than sons for both past and future events. The number of general details did not differ between genders.

The analysis also revealed a significant direction effect, for both specific details, $F(1, 202) = 37.31$, $p = .000$, and general details, $F(1, 202) = 9.88$, $p = .002$. Tukey HSD tests ($p<.05$) showed that across culture and gender groups, past events contained more specific details than future events, whereas future events contained more general details than past events.

Furthermore, a significant main effect of distance emerged for specific details, $F(1, 202) = 16.463$, $p = .000$., qualified by a Direction x Distance, $F(1, 202) = 8.917$, $p = .004$. Tukey HSD tests ($p < .05$) confirmed that mother-child dyads reported more specific details in past events than in future events, with the difference being larger for near events than for distant events. General details do not differ significantly across temporal directions and temporal distances. However, distant event ($M=6.44$) contained more general details than near event ($M=5.74$). In general, mother-child dyads reported significantly more specific than general details for both past and future events.

Relations between Maternal Variables and Children's Contributions

Past work (e.g. Fivush&Fromhoff, 1988;Reese et al., 1993; Tessler & Nelson, 1994) has suggested that elaborations and repetitions were the two key elements in delineating maternal styles and children's contributions in conversations about past event. In addition to elaboration, the degree to which mothers refer to past episodes or general event knowledge may also affect children's participation in conversations about future event. However, contrasting evidences showed that references to past episodes significantly and negatively correlated with 4-year-old children's contributions in future talk (JA Hudson, 2006). Would that be true for children in middle childhood? Which kind of maternal narrative style affect children's contributions, as indexed by the frequency of memory responses? Would it vary across past talk and future talk? Is there any cultural differences? Correlations between frequencies for mothers' conversation codes (elaboration, repetition, general references, past and future references) and the frequencies for children's conversation codes (memory responses and placeholders) were computed separately for memory talk versus planning talk, and Caucasian sample versus Chinese sample. Results are listed in Table 3.The only substantial difference in the relationship between mother and child variable appeared in the case of general references in past talk. Therefore, effects of culture were not further discussed.

As shown in Table3, consistent with previous findings, maternal elaboration was significantly positively correlated with children's specificity of responses for both past and future talks. In the same way, mothers who used more repetitions tend to have more repetitive children when talking about past and future events. Though

we noticed that in future talk, maternal repetition appear to be more positively correlated with children's memory responses than past talk, it would not be further discussed considering the absence of significant correlation. Also, the results indicated that referring to past episodes did not correlated with children's memory responses.

Discussion

To the best of our knowledge, this is the first cross-cultural study to link mother-child conversation with children's past and future event construction during middle-childhood. The present study provided the first empirical evidence for the cultural differences between conversations about recollection of past events and imagination of future events. As predicted, Caucasian mother-child dyads produced more specific details than Chinese mother-child dyads for both past and future events, and the cultural differences became stronger for future events. This could be explained by the tendency for Caucasian mothers to engage in highly elaborative conversation style with constant contextual statements and increased general references in future conversation compared with past conversation.

Existing researches has focused on how mother-child future talk affects children's conceptualization of future time (JA Hudson, 2002), but no research has focused on the specificity of children's responses. We found that in the individual level, children's specificity of responses positively correlated with elaboration and evaluation in past talk, and positively correlated with elaboration, evaluation and general references in future talk. This finding was consistent with previous findings. For example, in Hudson's study, although maternal elicitation style, indexed by ratio score of elaboration, differed across past and conversations, the frequency of maternal elaboration remained consistent and stable for older children (JA Hudson, 2002). That is, a mother who is more elaborative in past talk is more elaborative in future talk. Furthermore, higher levels of maternal elaboration in talking about the past and the

future (Engel, 1986; Hudson, 1990; McCabe & Peterson, 1991; Reese & Fivush, 1993, Hudson, 2006) are associated with higher levels of child participation across several investigations. Also, evaluation, which was connected with high-elaborative style, was proven to facilitate children's independent construction for both past event and future event, at both younger and older age (JA Hudson, 2006). The same study also argued that in future talk, the combination of elaboration and repetition is effective in eliciting children's responses. The repetition's impact in future talk contradicted with our findings that maternal use of elaboration and evaluation positively correlated with children's memory specificity in both past and future talk, while general references positively correlated with children's memory response only in conversations about future events. Repetition and references to past episodes did not correlate with children's memory response across past events and future events.

We also found that how maternal narrative style affects children's responses significantly differs in terms of general references across past events and future events. This might be explained by the differences between autobiographical memory and future thinking. Unlike simply reconstructing events that have already occurred, future thinking further recruits a dual-process, which involves recombining past experiences as well as one's general knowledge about the world to create hypothetical future scenarios (Addis et al., 2007; Corballis, 2003; Szpunar et al., 2007). This theory also helps to explain why references to past episodes are either uncorrelated or negatively correlated with children's response specificity. That is, new information or

details need to be created by reprocessing past episodes with general knowledge, rather than only referring to past experiences.

In spite of the similarities discussed above, results from our study suggest a number of ways in which the co-construction of memory events and future events may differ between Caucasian and Chinese mother–child dyads. In contrast with Caucasian mothers, Chinese mothers more often tended to take a repetitive approach by repeatedly asking similar questions without providing new information. We observed this from Chinese mother's significant greater use of detail repetition and style repetition. Results from simple correlation further showed that maternal repetition was positively correlated with children's placeholder frequency (ie: repeating previous utterance with no new information), which supported Chinese children's greater use of repetition in past talk.

In addition to the well-established contrasts of low-elaborative versus high-elaborative style, Caucasian mothers differed with Chinese mothers in the change pattern of (a) contextual statements and (b) general references, across both past events and future events. As mentioned above, Caucasian mothers outperformed Chinese mothers in number of specific details, and the cultural differences become larger in future talk. Whereas Chinese mothers outperformed Caucasian mothers in the number of general details in past talk, the cultural differences disappear in future talk. This pattern applied to the sample of children as well. Consistent with cross-cultural study of memory talk, Caucasian mothers were significantly more elaborative in future talk by providing more contextual statements, more questions

and less repetitions than Chinese mothers (Wang&Leitchman, 2000). Thus, cultural differences were more salient in future talk. This could be illustrated by the mechanism under different conversation purpose. Caucasian mothers prefer a high-elaborative approach for the sake of boosting relationship, while Chinese mothers regard the conversation as a task completion. Though maternal use of open-ended question and yes-or-no questiondecreased from past talk to future talk for both cultures, Chinese mothers' contextual statements sharply decreased, whereas there was only a slightly decrease among Caucasian mothers. Constructing future events might be more difficult for children because it requires recollection, recombination and recreation, as well as hypothetical references and representations of future time(D'Argembeau & Van der Linden, 2004, D'Argembeau & Van der Linden, 2011). Thus, the mother's scaffolding effect to engage children in verbal discussion about unknown future events was illustrated by speculating what might happen, and asking for children's preferences. If children did not elaborate, high-elaborative Caucasian mothers would provide contextual statements to express their thoughts for the sake of eliciting or introducing new topics. And "that keeps the story going", which in the same way as reported in memory talks (Wang et al., 2000, Reese&Fivush, 1993).

The cultural differences could also be explained in terms of cultural beliefs and social norms. In the present study, we found that on average, both Caucasian mothers and children made more references to the child, whereas Chinese mothers and children referred to others more, such as their peers, families and so forth. This

finding was consistent with the different cultural norms between independent culture and interdependent culture. Independent culture, such as western culture, focus more on themselves and their mental states. However, interdependent culture, like Asian culture, pay more attention to others and the social relationship. Intriguingly, the higher degree of self-evolvement among the Caucasian sample also facilitates imagining the future. D'Argembeau et al. found that for individuals who are prone to thinking about the self and paying attention to their inner experiences are also more likely to subjectively "pre-experiencing" the future D'Argembeau & Van der Linden, 2010&2011).

Compared with past talk, Caucasian mother-child dyads increasingly produced a similar number of general details as Chinese mother-child dyads in future talk, especially for semantic knowledge. Considering the previous discussion about the role of general references in the facilitation of future thinking, Caucasian mothers used an effective combination of contextual statements and general references to compensate children's relative weakness in future thinking. This conclusion also sheds light on the cultural differences in autobiographical memory and episodic future thinking during middle childhood and adulthood. Future research is needed to examine whether Chinese mothers could be trained to be more effective in elicitation of future conversations. It would also be important to include a longitudinal study investigating the narrative style within each culture in which mothers facilitate children's autobiographical memory and future thing during years.

Not surprisingly, children in our study represented temporally past events in greater specific detail than future events as well as represented temporally near events in greater specific detail than distant events. Previous studies have documented that individuals provide more sensory detail, cohesive, and emotional accounts of the past than the future. In the same way, for both past and future events, temporally close events were associated with vividness, more sensory details, clearer contextual information and a stronger feeling of pre-experiencing than distant events (Berntsen&Rubin, 2012, Berntsen&Bohn, 2012). In addition, Spreng and Levind found that the retention rate of future events fit in the power function of past events, thus declining as a function of temporal distance. The only difference is that the slope for future event is steeper, suggesting the greater number of details in near future rather than distant future (Spreng&Levine, 2006).

Gender differences also emerged in our study, suggesting mothers produced more specific details when talking with daughters than sons. Similarly, previous studies in memory talk showed that mothers tended to be more detailed and more elaborative with daughters. For future events, Eisenmann investigated the gender differences through mother-child conversations about imminent emotional events. They found that within western culture, mother-son dyads and father-son dyads manifest the repetitive or low-elaborative style. In addition to being more elaborative, mothers are also more cooperative when talking with their daughters than with their sons. They pay more attention to jointly interaction, and are more interested in representing future events and stimulating their girls' understanding of future events (Eisenmann,

1997). Therefore, mother’s talk about past and future events is sensitive to gender differences.

To sum up, the style in way which mothers construct past events and future events impact on the children's ability of event construction. Mother-child conversation in different culture contexts showed both consistency and discrepancy across past events and future events. Research is needed for further exploring the causes and developing intervention program to train Chinese mothers being more elaborative and effective in eliciting their children's responses. This study also shed light on the central influence of socialization on autobiographical memory and future thinking in different cultures.

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TABLE 1

Mean frequencies (and standard deviations) for mothers' codes by cultural group

	Past Talk				Future Talk			
Variable	America	China	t value	p	America	China	t value	p
Details								
Specific details	81.15(27.45)	68.10(20.24)	2.72	0.008	68.72(35.91)	51.80(34.91)	5.61	0.000
Event	46.31(27.45)	39.60(20.24)	1.82	0.071	36.45(22.46)	25.00(17.29)	5.32	0.000
Time	4.38(3.05)	2.80(1.88)	5.15	0.000	4.45(2.24)	4.20(3.01)	0.79	0.433
Place	6.55(4.29)	5.60(4.31)	2.10	0.038	7.45(3.90)	4.50(2.76)	6.23	0.000
Perceptual	8.49(4.36)	8.10(4.19)	0.88	0.382	6.18(3.01)	6.00(2.20)	0.56	0.579
Thought/Emotion	15.42(10.22)	12.00(9.87)	2.89	0.005	14.18(6.17)	12.20(6.79)	2.38	0.019
General details	16.98(10.90)	23.78(18.07)	-3.36	0.001	25.27(18.11)	29.10(26.71)	-1.51	0.133
Extraneous Event	5.04(4.87)	6.86(9.98)	-1.47	0.144	5.18(5.06)	8.10(12.06)	-2.05	0.043
Semantic	3.33(3.34)	4.66(5.22)	-2.02	0.046	10.55(6.86)	8.80(7.29)	1.47	0.144
Repetition	7.00(5.01)	12.44(9.70)	-4.85	0.000	7.73(2.25)	11.00(5.06)	-7.38	0.000
Other	1.62(1.69)	0.82(1.06)	4.31	0.000	1.82(1.70)	1.20(0.90)	3.46	0.001
Conversation Codes								
Elaboration	64.00(2.20)	58.10(3.84)	1.50	0.138	50.82(29.48)	39.20(21.87)	5.04	0.000
Open-Ended Questions	19.87(8.88)	19.20(10.43)	0.51	0.606	13.45(6.52)	13.10(6.18)	0.42	0.678
Yes-No Questions	12.45 (7.40)	13.10(9.57)	-0.60	0.552	10.18(7.02)	9.60(3.51)	0.79	0.432
Contextual Statements	31.67 (20.58)	25.80(23.86)	2.13	0.045	27.18(18.00)	16.50(10.14)	5.83	0.000
Repetitions	10.85(7.79)	15.30(12.52)	-3.06	0.003	12.18(4.66)	14.80(7.06)	-5.52	0.000
Evaluations	26.55(12.02)	19.86(11.78)	4.95	0.000	23.45(10.58)	20.80(10.40)	2.47	0.015
Content								
Self	13.73(8.39)	11.78(7.52)	2.84	0.005	12.81(6.53)	9.90(8.86)	2.60	0.011
Other	7.73(4.39)	11.50(10.30)	-2.48	0.015	7.90(10.12)	13.82(9.07)	0.45	0.652
Self-other	11.00(6.57)	10.90(6.00)	0.08	0.935	7.45(6.50)	7.00(6.77)	4.60	0.000

TABLE 2

Mean frequencies (and standard deviations) for children's codes by cultural group

	Past Talk				Future Talk			
Variable	America	China	t value	p	America	China	t value	p
Details								
Specific details	54.36(30.97)	48.80(33.61)	2.32	0.023	22.36(12.59)	18.70(8.94)	2.33	0.022
Event	32.09(17.46)	29.60(22.00)	1.29	0.200	15.36(7.77)	10.70(4.91)	4.27	0.000
Time	2.00(1.05)	1.40(0.67)	3.44	0.001	1.82(0.94)	0.50(0.68)	8.14	0.000
Place	4.00(2.78)	3.10(1.73)	2.50	0.015	1.91(1.46)	1.30(1.02)	2.46	0.015
Perceptual	6.64(2.63)	6.40(3.90)	0.52	0.604	1.82(1.04)	0.40(0.67)	8.23	0.000
Thought/Emotion	9.64(7.75)	8.30(5.03)	1.47	0.145	7.45(4.11)	5.80(4.16)	2.05	0.043
General details	6.36(8.04)	13.90(7.14)	-6.85	0.000	8.45(6.05)	10.70(12.13)	-1.22	0.226
Extraneous Event	3.36(2.79)	3.20(3.81)	0.30	0.767	0.86(0.88)	2.00(4.24)	-1.94	0.055
Semantic	1.64(1.59)	2.30(2.67)	-2.09	0.040	6.64(4.72)	5.50(8.44)	0.86	0.391
Repetition	3.55(3.84)	6.10(3.59)	-7.56	0.000	1.82(0.94)	1.90(1.89)	-0.29	0.776
Other	2.36(1.69)	2.30(1.06)	0.21	0.836	2.64(1.38)	1.30(1.50)	4.76	0.000
Conversation Codes								
Memory Response	45.64(27.18)	41.40(22.95)	2.10	0.038	19.18(6.64)	16.70(5.03)	2.14	0.034
Placeholder	13.18(5.60)	13.00(4.96)	0.28	0.779	2.36(1.98)	4.30(2.89)	-4.03	0.000
Evaluation	7.91(5.68)	4.70(2.20)	4.71	0.000	7.36(3.90)	3.90(2.32)	5.46	0.000
Content								
Self	10.27(5.60)	8.90(7.11)	1.60	0.113	7.45(4.22)	6.60(5.50)	0.90	0.372
Other	3.18(3.14)	5.50(4.59)	-4.06	0.000	4.00(2.62)	4.40(4.02)	-0.61	0.544
Self-other	6.55(6.84)	6.40(4.40)	0.19	0.848	3.27(2.48)	4.90(4.90)	-2.18	0.032

TABLE 3

Simple correlations between mothers' and children's conversation codes

	Past Talk		Future Talk	
Variable	America	China	America	China
Mother/Child				
Elaboration/Specific Response	0.84**	0.89**	0.64**	0.59**
Evaluation/Specific Response	0.76**	0.57**	0.63**	0.39**
Repetition/Specific Response	0.07	0.07	0.26	0.21
Repetition/Placeholder	0.31*	0.68**	0.29	0.58**
General/Specific Response	0.30*	0.00	0.32*	0.45**
Future Reference/Specific Response	0.11	-0.18		
Past Reference/Specific Response			0.00	-0.03

*p**<0.01, p*<0.05*